



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/725,173

12/01/2003

Nahar Singh

P02,0162-01

2059

7590

05/05/2006

SCHIFF HARDIN & WAITE

Patent Department

6600 Sears Tower

233 South Wacker Drive

Chicago, IL 60606

EXAMINER

MASLOVA, OXANA

ART UNIT

PAPER NUMBER

2859

DATE MAILED: 05/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/725,173

Applicant(s)

SINGH ET AL.

Examiner

Oxana Maslova

Art Unit

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 18-26 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- Paper No(s)/Mail Date 12/01/2003

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Objections

1. Claim 19 is objected to because of the following informalities:

Claim 19 recites the limitation "the liquid" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 18-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luukkala (4906107) in view of Kim et al (4516864) (hereafter Kim).

Luukkala discloses in Fig.3 an immersive probe that provides measurement of the temperature in a liquid container (oil tanks and cisterns) (col. 1 lines 20-23), having a temperature below a melting point of the chemical/ paraffin wax (col.3 lines 1-2); detecting a value of an optical signal generated by transmission of the light signal through the chemical/paraffin wax (col.3 lines 1-2) in a solid state and at the room temperature; and detecting an optical signal generated by transmission of the light signal through the chemical/paraffin wax at its melting point and in liquid phase (col.4 lines 47-56); transmitted light signal from the

Art Unit: 2859

probe is sent to the receiver 14 (Fig.3). Receiver 14 is similar to receiver 3 shown in Fig.1, which includes means for detecting the light received and an electronic circuit for providing and alarm signal (col. 4 lines 16-21).

With respect to claim 18: since Luukkala performs detection of an optical signal, in a broad sense, it is considered, that this optical signal would be a maximum optical signal.

Luukkala does not teach a photo-detector as the light detecting means in the receiver 14.

Kim discloses a probe in the field of applicant's endeavor. Kim teaches that the receiver comprises a photo-detector 34 (Fig.2) to detect the optical signal from the probe.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a photo-detector, as taught by Kim, as the light detecting means disclosed by Luukkala, because both of them are well known alternate types of light detecting means which will perform the same function of detecting an optical signal corresponding to a temperature of the liquid of interest, if one is replaced with the other.

With respect to claim 19: Luukkala and Kim do not disclose the particular material, i.e., water for the liquid in the container. However, selecting the particular liquid for testing, absent any criticality, is only considered to be selecting a preferred liquid out of a plurality of liquids, whose temperature needs to be monitored.

Art Unit: 2859

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the device, disclosed by Luukkala and Kim, to monitor the temperature of the water, such as the water in a hot tub, to prevent unsafe temperatures.

With respect to claim 20: Luukkala discloses the probe, wherein the chemical is selected from the group consisting of paraffin wax.

With respect to claim 21: Luukkala discloses that the probe has a housing filled with the chemical/paraffin wax, which has a melting point in the range of 75-85 C (col.4 lines 58-60).

With respect to claims 22-23: Luukkala discloses the probe, with structure similar as the structure claimed by applicant and thus it is implied that the optical signal propagation in the probe is secure and without any cross talk or interference problem and signal in the probe is unaffected by presence of electrical signals.

With respect to claim 24: Luukkala and Kim do not disclose the particular remote sensing of up to 1 km. However, this particular range, absent any criticality, is only considered to be the " optimum " range of the distance of the probe disclosed by Luukkala and Kim, that a person having ordinary skill in the art would have been able to determine using routine experimentation based, among other things, on the desired accuracy of signal transmission, the environment, where the probe is used, and particular location of the measuring equipment.

See In re Boesch, 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the probe with remote sensing up

Art Unit: 2859

to 1 km in order to locate the receiver at a different, remote location other than the environment being tested.

With respect to claim 25: Luukkala and Kim do not disclose that the output signal increases six times from room temperature. However, this increase in output signal, absent any criticality, is only considered to be the "optimum" value of the signal increase used by the Luukkala and Kim, that a person having ordinary skill in the art at the time invention was made would have been able to determine using routine experimentation based, among other things, on the type of liquid being tested. See *In re Boesch* 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide that the output signal increases six times in order to facilitate the determination that a predetermined temperature has been reached.

With respect to claim 26: Luukkala discloses the method, wherein the chemical/paraffin wax is opaque at room temperature and becomes transparent at a predetermined higher temperature enabling actuation of a relay to at least one of stop a heating process and raise an alarm (col. 6 lines 7-11).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related devices and methods. McGinniss et al (5052820) discloses thermal refractive materials for optical sensor application, O'Keefe et al (6694067) discloses cavity enhanced fiber optic and waveguide chemical sensor, Beasley et al (6827842) discloses on-line determination of wax crystallization temperature of waxy solvent stream, Sweeney (5110217)

Art Unit: 2859

discloses method for optically and remotely sensing subsurface water temperature, Murphy et al (5381229) discloses sapphire optical fiber interferometer.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Oxana Maslova whose telephone number is 571/ 272-6532. The examiner can normally be reached on 8:30 to 5:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571/ 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Oxana Maslova
Patent Examiner


Diego Gutierrez
Supervisory Patent Examiner TC 2800
April 25 2006